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(54) Title: 3-DIMENSIONAL *IN VITRO* MODELS OF MAMMALIAN TISSUES

(57) Abstract: Novel 3-dimensional *in vitro* models of mammalian tissues are provided. In a preferred embodiment, the models simulate behavior of human cancerous tissues at various stages of a solid tumour progression or the cell senescence, apoptosis or tissue regeneration in normal or cancerous human cells. The models are particularly useful for screening and testing of anticancerous drugs and assessing their toxicity for both the tumour and the surrounding tissue. Novel cellular automaton models for analysis and simulation of 3-dimensional cell organoids have also been developed. These models are useful for studying intercellular communication and predicting effects of gap junction channels modulating drugs.

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